

# SANDIA LAB NEWS

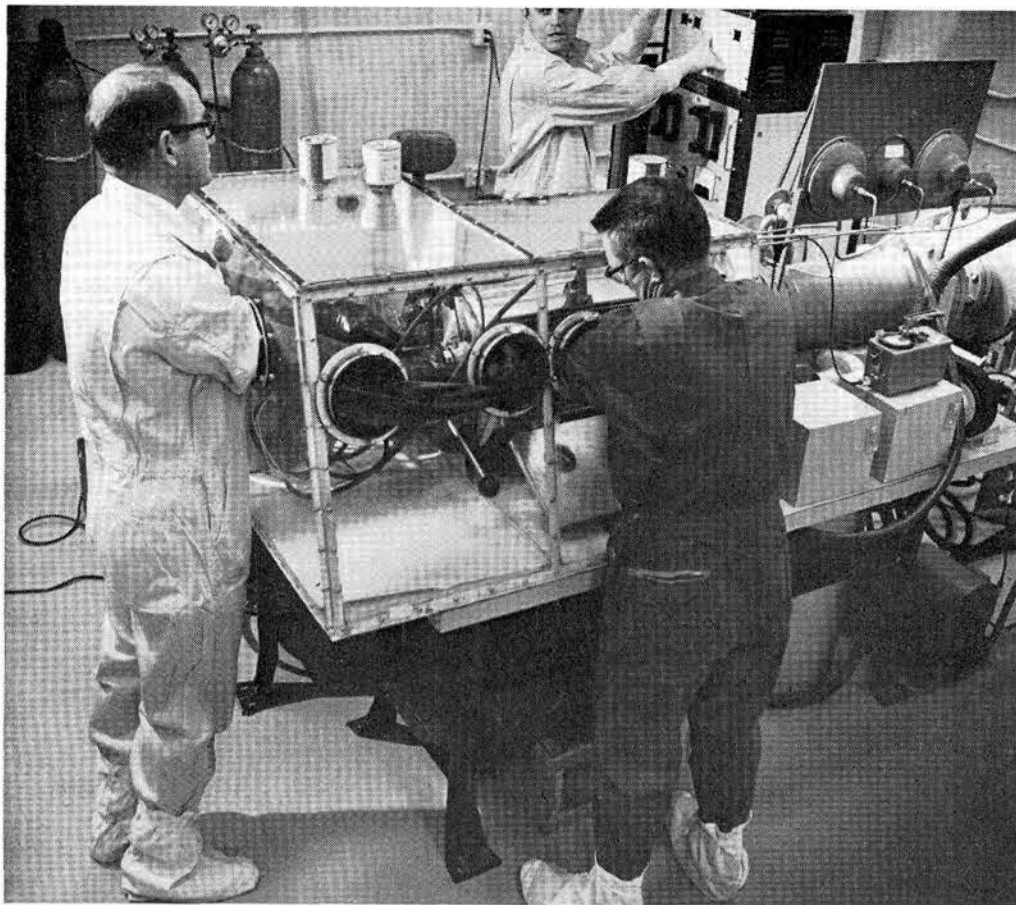


VOL. 20, NO. 2, JANUARY 26, 1968

SANDIA LABORATORIES

ALBUQUERQUE, NEW MEXICO  
LIVERMORE, CALIFORNIA

OPERATED BY SANDIA CORPORATION FOR  
THE U. S. ATOMIC ENERGY COMMISSION



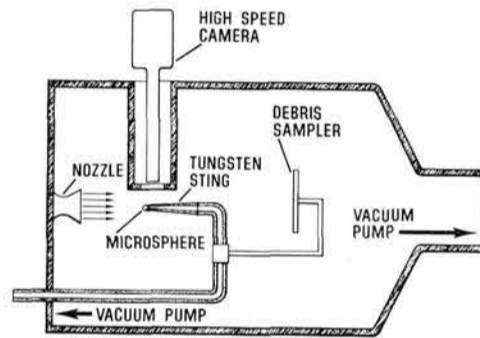
PREPARING TO BLAST A MICROSPHERE of plutonium dioxide in the plasma jet facility in Bldg. 849 are (l to r) I. B. White; B. W. Marshall, at console; and K. L. Romine (all 9311). The small arc tunnel is enclosed in the "glove box" shield to contain radioactive plutonium (see sketch). The facility and operating procedures are monitored by Health Physics Division 3312 to avoid radiation hazard or contamination.

## Radioactive Specks Are Blasted With High-Temperature Jet Stream

How does one determine what happens to a speck of plutonium about the size of the point of a pin when it is exposed to a 10,000 mile-per-hour blast of gas heated to 12,000°F?

Sandia is studying changes plutonium microspheres undergo during simulated re-entry into the earth's atmosphere because billions of them in the size range of .002 to .01 of an inch in diameter are used in fuel capsules of isotopic generators. These generators include the SNAP-19, which will supply some of the electric power for the Nimbus-B weather satellite, and the SNAP-27 power source for the Apollo Lunar Surface Package.

The size of the microspheres is selected primarily, but not solely, to serve two safety purposes. First they must be small enough to be readily dispersed in the earth's atmosphere should the isotopic generator and its fuel capsule break up on re-entry. Conversely, they must be too large for human and animal inhalation. To determine if the particles remain too large for inhalation after re-entry, Radioactive Materials Behavior Division 9311 is studying changes these microspheres undergo during simulated re-entry conditions.



MAJOR PARTS of the arc tunnel in the radioactive plasma test facility are shown in this simplified line drawing. Components are not shown in proper size relationship.

In the experiments conducted in a radioactive plasma test facility in Bldg. 849, the plutonium microspheres are subjected to temperatures of 12,000°F. at velocities up to 15,000 feet per second. A 200- to 250-micron microsphere is held in the hot jet

(Continued on Page Two)

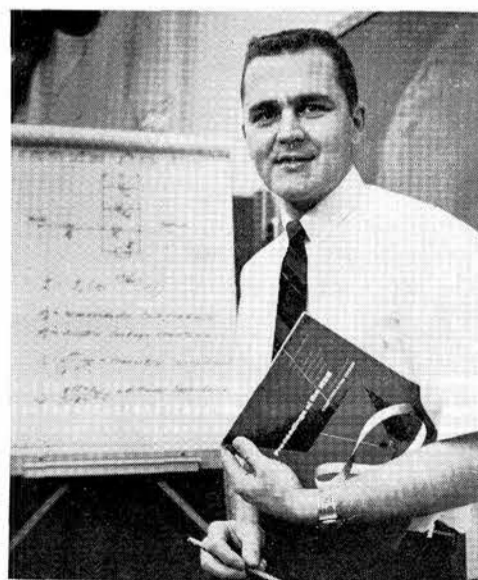
### Powerful Analysis Tool

## Engineers Advance Computer-Aided Circuit Designs

Every circuit designer dreams of a general computer program which could analyze his new design, regardless of complexity, and tell him how his proposed circuit would perform under all conditions of frequency, signal level and temperature. This would save hours of manual computation and perhaps weeks in "breadboarding" the circuit and manually conducting performance tests.

This dream is being brought nearer to reality by the work of a team of Sandia engineers in Test Equipment Reliability and Engineering Design Practices Division 2442. The first general purpose program brought to their attention was NET-1, developed in 1963 by Allan Malmberg at LASL for use on the Maniac II computer. Using this program as a starting point and adding others as they became available, these men have been adapting and extending general purpose computer programs to analyze circuit designs as part of the test equipment reliability activity.

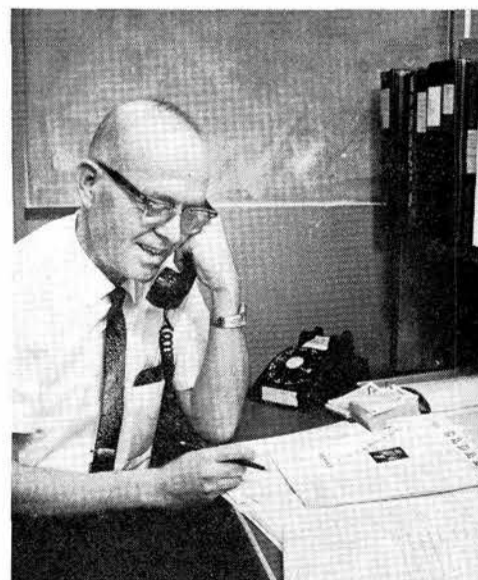
Marvin Daniel has developed mathematical models for Zener diodes and tunnel diodes. These models, combined with existing models of switching diodes and junction transistors, will allow computer analysis of about 50 percent of all active circuits normally encountered. A significant development in computer-aided design, Marv's accomplishment was featured in the November 1967 IEEE PROCEEDINGS, a special issue devoted to the subject of computer-aided design. Title of the paper was "Development of Mathematical Models of Semiconductor Devices for Computer-Aided Circuit Analysis."



MARV DANIEL

— develops mathematical models —

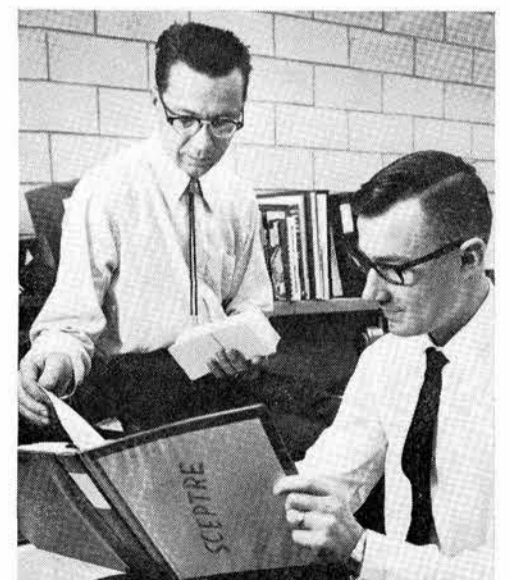
Troy West has adapted for use on Sandia computers a general purpose circuit analysis program called SCEPTRE (System for Circuit Evaluation and Prediction of Transient Radiation Effects). This program was developed by IBM for the Air Force Special Weapons Center at KAFB and should find valuable use at Sandia. Dave Harstad is assisting in model development and further adaptation of the SCEPTRE program.



CLINT PURDUE

— heads national effort —

Since computer-aided circuit design is of interest throughout the country, Clint Purdue, another member of the team, has been instrumental in organizing a national effort to share advances in the field. He is currently serving as national chairman of the newly formed IEEE CADAR (Computer-Aided Design, Analysis and Realizability) Council. Purpose of the 1500-member organization is to establish communication between the various IEEE groups



TROY WEST and DAVE HARSTAD

— adapt SCEPTRE program —

and coordinate the numerous computer-aided design activities. Clint is also chairman of the IEEE CARAD (Computer-Aided Reliability Analysis and Design) Committee. L. J. Paddison, director of Product Test Equipment Development 2400, assisted in the formation of CADAR and CARAD and serves as technical advisor to both organizations.

"Computer programs for analyzing spe-

(Continued on Page Five)

### Nevada's Upper Hot Creek Valley

## Sandians Assist in Underground Test At Possible New Nuclear Test Site

An underground nuclear test in the upper Hot Creek Valley of Central Nevada was successfully conducted Friday, Jan. 19, with a number of Sandians participating.

Purpose of the test, according to an Atomic Energy Commission announcement, was to provide earth-shock measurements to help determine whether the area will be suitable for testing at higher yields than

is possible at the present Nevada Test Site.

The nuclear device detonated was in the same intermediate yield range as the largest used at the Nevada Test Site—equivalent of from 200 thousand tons to one million tons of TNT.

The device was placed at the bottom of a drilled vertical hole at a depth of 3200 feet. The test site is about 175 miles north-northwest of Las Vegas, approximately 200 miles east-southeast of Reno, and about 70 miles north-northeast of Tonopah.

Sandia Laboratory organizations provided arming and firing systems support, earth-motion and blast-measurement instrumentation, and seismic and microbarograph stations.

A&F Field Support Division 7132 personnel who participated included R. K. Petersen (7132 supervisor), E. L. Jenkins, W. E. Holder, M. H. Brock, D. B. Browning, J. S. Talbutt, A. B. Church, D. A. McFadden and R. G. Mosteller.

Participating from Instrumentation Fielding Division I 7123 under B. C. Benjamin were H. R. Holmes, D. R. Breeding, A. M. Triest, M. E. Gilmer and L. E. Larsen.

Project scientists for seismic and microbarograph programs were Dorris Hankins (7111) and Hugh Church (5234). Safety advisor to the AEC's Nevada Operations Office was H. C. Walker (7134).

In addition to Sandia instrumentation, the Coast and Geodetic Survey of the U. S. Environmental Science Services Administration operated a network of seismic recording stations at about 90 locations ranging from near the detonation point to several hundred miles away. Seismic recorders already in place from past tests in Las Vegas and other Nevada communities were also operated during the test.

## No Man Can Stand Alone

"No man is an island unto himself—every man's death (and suffering) diminishes me, because I am involved in mankind." These words expressed by the British poet, John Donne, over three hundred years ago have never rung truer than they do today.

For if we are to learn anything from the tragic riots in our cities over the past few years, one fact clearly stands out: The suffering and discontent of the less fortunate must be allayed, if not for humanitarian reasons, then for very practical ones. No nation can be strong as long as it is torn by internal turmoil and violence.

And we are foolishly shortsighted if we expect our government and our institutions to resolve these problems by themselves. As Frederick R. Kappel, former AT&T Board Chairman, recently pointed out when discussing the acute social problems of the day, "We are all in this fix together, we all share responsibility, and we can only win through if we act together."

These sentiments were reflected by P. H. Gorman, president of WE, and H. I. Romnes, chairman of the Board of AT&T, in their recent New Year messages. "We are strongly challenged . . . to take the position of leadership in meeting critical social problems," said Mr. Romnes. Mr. Gorman, in turn, saw increased hope for the solving of these tremendously complex social/economic problems "by the heightened awareness on the part of our people, of the root causes and possible remedies of the social malaise in the cities."

In the spirit of this position, Bell System companies lost no time in advancing to the front line of battle in the war on poverty. In the last few days, four Bell companies in New Jersey—New Jersey Bell, WE, BTL, and AT&T Long Lines—started a job program to provide work for more than five hundred people in the areas of the state where unemployment is the most extensive. A bold experiment, this plan involves the hiring and training of people who are unable to meet existing employment standards.

Sandia Laboratory also is committed by its Plan For Progress, strongly reaffirmed recently by President John Hornbeck, to assist in this very important program of helping the minority groups attain equality and opportunity. Among other activities designed to help the underprivileged, Sandia is working with a group of local firms to train selected people for jobs in industry. Just last week, for example, a three-month training program was completed for 23 women, all but two of whom were on welfare, to help qualify them for gainful employment.

But what about the individual employee? What about you and me? What can we do to help?

True, many fine efforts are being made collectively by Sandia employees who participate in such drives as the Employees Contribution Plan and Christmas projects; but ultimately, if the job is to be done well, the individual participation of all employees will be necessary. The fine efforts of many Sandians have been noted in the LAB NEWS through the years, but many, many more individuals must help.

We have read much about the economic and social conditions in the big cities, but what about our town? How do we shape up? A few months ago an article appeared in the ALBUQUERQUE JOURNAL with the heading "Smugness of Affluence Angers Poverty Workers." One of the workers added, "A lot of those guys up in the Heights are real smug and snug in their big houses. Why worry about the poor? Uncle Sam is taking care of them."

After reading the article one can sympathize with the bitterness of the person who works daily with these disadvantaged people, sharing their unhappiness and frustrations. One house, which has two rooms and no bathroom, contains 15 people—the parents and 13 children. The 15-year-old daughter dropped out of high school because she had no suitable clothes to wear. This child ran when she saw the reporter because she was so ashamed of the way she lived.

Many school children in Albuquerque go hungry at noon because they are too embarrassed to ask for free lunches. That children go hungry in any part of our world is tragic enough. That children go hungry in Albuquerque, children so close that we can reach out and touch them, is deplorable. And that is the whole point. Do we reach out to them?

The fires of the long hot summers smoulder in the winter of discontent and misery. We will douse these fires permanently only if we take firm steps to alleviate the misery of the underprivileged. Children should not have to drop out of school because they lack clothing. Nor should they go hungry because they are too poor to afford food and too proud to beg. As Mr. Kappel pointed out, we all share responsibility for these conditions.

Whether we like it or not, each person's suffering does affect us—because we are part of mankind.

## Radioactive Specks Blasted

stream on the tip of a tungsten cone-shaped needle (sting). First mounted on the sting with an epoxy adhesive, the particle is held in place by a vacuum that extends through the sting's hollow core to the tip.

A greatly-enlarged image of the plutonium microspheres visible response — heating and ablating — under these severe conditions is obtained with a movie camera operating at speeds up to 6000 frames per second. A sampling plate is placed "downstream" of the test specimen to catch ablated particles.

After each test run, the sampling plate is put into a special container and carried to a "hot lab" facility operated by 9311. There an unexposed film is placed on the plate and developed to show distribution of the radioactive material (radiograph). The plate is then sent to an independent laboratory where the deposited debris is counted and measured.

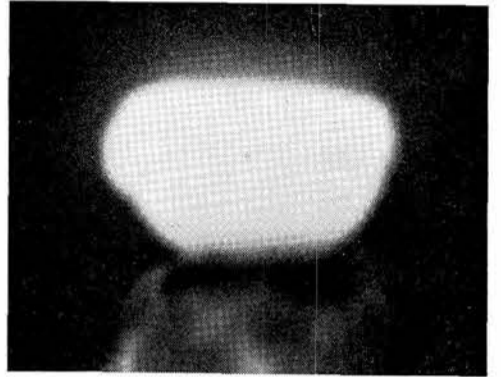
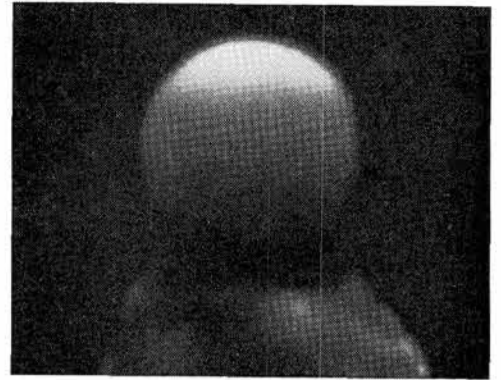
Plutonium microspheres are also weighed and measured before and after each test to determine mass loss. In addition, what is left of the sphere after the re-entry simulation test is cross sectioned to study metallurgical changes.

A similar facility (also in Bldg. 849) is used to study the response of non-radioactive materials (glass, gold, alumina, etc.) under the same conditions. In both facilities, test run duration can be controlled down to one-tenth of a second.

Parallel with the studies in the plasma test facilities here, Division 9311 is supporting analytical and other experimental studies. One analytical study to develop methods of predetermining at what point the microsphere's mass distribution starts changing and it starts losing some of its mass through ablation is being conducted by an outside research laboratory. Other Sandia organizations are also providing theoretical data.

Another experimental study is being conducted for Sandia in a free-flight ballistic range facility at Santa Barbara, Calif., under contract. There non-radioactive 200- to 400-micron particles are launched at desired velocity-density combinations to cause substantial ablation under near-perfect simulations of re-entry. Using laser photographic systems, the particles are photographed in free flight, about 20,000 feet per second. Impact plates and sampling devices are also used to determine if debris is stripped from the particles. The samplers were designed by R. M. Elrick (5234), who will also analyze the data obtained from the samplers.

Billy W. Marshall (9311), who is project leader of the experimental studies, designed the plasma test facilities used in the studies



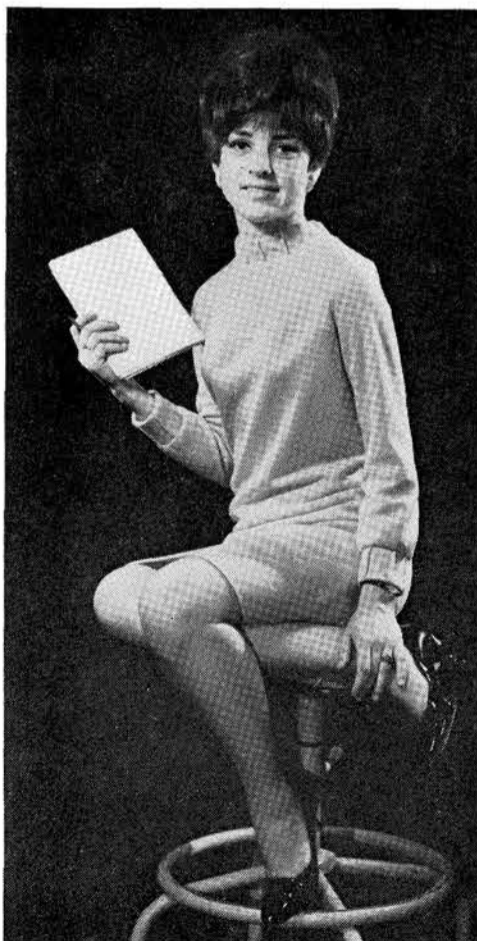
ABLATIVE EFFECT on plutonium microsphere is shown magnified about 100 times. The top picture was taken 0.09 of a second after the start of the experiment. The plutonium microsphere is mounted on the conical sting. Ablation is visible in the second picture taken 0.20 of a second through the experiment.

at Sandia. I. B. White and K. L. Romine (both 9311) operate the radioactive plasma test facility. The "hot lab" facility is operated by J. F. Hudson and M. D. Devore (both 9311).

L. D. Taylor (9321) provides theoretical support and Herman Romero (1131) provides metallurgical support in metallographic studies of non-radioactive particles at Sandia and radioactive particles at Los Alamos Scientific Laboratory. B. T. Kenna (1121) and others in Division 1121 developed neutron activation techniques that will be used to determine the size of debris collected on the samplers used in the ballistic range experiments. L. H. Sanders and T. R. Crites (both 3312) recommended design modifications and operating procedures to meet health physics' requirements.

## Events Calendar

- Jan. 26-28, Feb. 1-4, 8-11—"One Flew Over the Cuckoo's Nest." Old Town Studio, 1208 Rio Grande NW, for reservations tel. 242-4602.
- Jan. 26—St. Andrews Society (and other true Scotsmen) observe Robbie Burns' birthday. Holiday Inn, 7 p.m., dinner and highland dancing to bagpipes.
- Jan. 27—Jose Greco and his Spanish Dancers. UNM Concert Hall, 8:15, for reservations tel. 277-3121.
- Jan. 27—Fifth annual Jaycee Invitational Indoor Track Meet, 8 p.m., Tingley Coliseum.
- Feb. 5—The American Folk Ballet. UNM Concert Hall.
- Feb. 7—Basketball: UNM vs. New Mexico State. University Arena.
- Feb. 10—Basketball: UNM vs. University of Texas at El Paso. University Arena.



Diana Barela (AEC/SAO)

### Take A Memo, Please

Winter can be a dangerous season of the year. Watch out for slick spots on the highway, icy sidewalks, and poor visibility; but also be aware of the safety hazards that exist throughout the year.

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## J. A. Chacon to Washington On Mexican-American Staff



For the next three months, J. Andy Chacon, programmer in Administrative Systems Division II 9426, will be on temporary assignment in Washington, D.C., with the Inter-Agency Committee on Mexican-American Affairs.

Andy participated in discussions on bilingual education and bi-cultural values when the Committee held hearings in El Paso last October. President Johnson established the Committee "to assure that Federal programs are reaching the Mexican Americans and providing the assistance they need, and to seek out new programs that may be necessary to handle problems that are unique to the Mexican-American community."

While he is on leave of absence from Sandia, Andy will serve as a consultant to the Committee and will be particularly concerned with program development.

"This appointment is a direct result of my participation in the El Paso meeting," he says, "and is indirectly the result of a paper I wrote while in Peru on the effect of cultural shock on volunteer effectiveness. (In 1965, Andy spent nearly a year as associate director of the Peace Corps in Peru.)"

"I feel that the same self-help approach should be used with Mexican Americans as is being done in countries aided by Peace Corpsmen. Instead of handouts, give the people the 'know-how' and then lend them money to carry out their activities."

*Continued from Page One*

# Computer-Aided Designs

cialized circuits have been available for a number of years," Marv says. "Their use, however, has been hampered by a lack of proper approximations for active electronic components. The accuracy with which a circuit can be analyzed is directly related to the accuracy with which the nonlinear behavior of active elements can be approximated."

The complexity and difficulty of developing mathematical models for active devices can be appreciated by looking at some of the factors involved.

For instance, the mathematical model for any device must be in a form which can be easily translated into computer language. It must be valid for any frequency, voltage, current and temperature at which the electronic device may operate. Finally, the model parameters (element values or co-efficients in the defining equations) must be easily measured or easily extracted from measured data. A given model is valid for only one family of devices (junction transistor, switching diode, tunnel diode, etc.). Each device type (i.e., each 1NXXX diode or 2NXXX transistor) within that family is defined by a unique set of parameters. This set of parameters for each type is stored in the computer library for recall whenever that device is used in a circuit being analyzed.

It would be desirable to have the parameter information available on manufacturer's specification sheets. However, since this has not yet been accomplished, a major task in developing a model is determining what measurements must be made on the device in order to obtain information from which parameters can be extracted. Measurements are made on several devices of each type, and the data are reduced by use of other specially written computer programs to obtain the unique parameters to be stored in the computer library.

Currently Marv and Dave are developing models for unijunction transistors, silicon controlled rectifiers, and field effect transistors. They estimate that with the addition of these models to the ones already in existence, general computer programs could be compiled which could analyze about 90 percent of the circuits presently used in Sandia test equipment.

Sandia reliability test equipment is highly complex and sophisticated and is usually developed concurrently with weap-

## Rehabilitation Center

# Efforts of Sandians Aid Handicapped

How does an organization go about "rebuilding" human beings? It takes specialized facilities, trained personnel, volunteers, patience — and often a great deal of hope.

The Rehabilitation Center, Inc., in Albuquerque combines these incalculable elements with the most complete out-patient facilities in New Mexico for the treatment of the physically disabled. Sandia employees help support it through the Employees Contribution Fund (it's one of the agencies in the United Community Fund) but there are other ties between the two organizations:

—A Sandia executive is vice president of the governing board; another executive is chairman of the Personnel Committee.

—Sandia employees and their families receive assistance through services offered.

—A Sandia retiree helps disabled persons in the Center's Vocational Clinic.

—Handicapped persons assist in a research project through a Sandia sub-contract.

### Executives Volunteer

To carry out a wide variety of services and to allocate funds received from a number of different sources, a rather complex budget system is needed. That's where Robert G. Luckey, Comptroller 4100, fits into the picture.

"About five years ago, a friend asked if I would be interested in helping the Center. They needed someone with my type of financial experience. I first served on the Finance Committee, then was appointed treasurer for a two-year term (the max-

imum under the by-laws). Now I'm vice president and still a member of the Finance Committee," Mr. Luckey says.

Each activity is budgeted separately. In therapy treatment alone, a number of factors enter into categorizing budget items. The patient may be able to pay only a portion of the cost—or none at all—and the balance may be paid by the New Mexico Department of Public Welfare, Medicare, or some other source. Each case must be handled individually.

"Despite the difficulty of coordinating so many different activities," Mr. Luckey adds, "I'm convinced the Center is efficiently operated."

L. J. Heilman, director of Quality Assurance 2100, is another Sandian who is serving the Center in a voluntary capacity. He is chairman of the Personnel Committee which is concerned with the number and types of specialized employees, salaries, and a benefits program. He has been serving on the committee since last Spring.

### Assistance Given

The Center has facilities and personnel to assist both children and adults. At monthly clinics, consultant specialists and others associated with the Center evaluate the needs of new patients and assess the progress of patients already under treatment. Follow-up action may include physical therapy, occupational therapy, speech and hearing assistance, psychological services, cleft palate clinic, or special education. The latter is designed to further the mental, social and emotional development of young children to prepare them for entering first grade. Pre-school children, some as young as 18 months old, attend two-and-a-half-hour classes three days a week. Many of them are victims of cerebral palsy or have other physical disabilities. At the Center, some learn to walk or to sit; others acquire the muscular coordination needed to be able to feed themselves or speak. No academic teaching is offered; instead, realistic situations are presented to prepare the child for life away from his sheltered home environment. The theory is, "If the child is intellectually alert, he should be with normal children."

About half of the patients are children—victims of accidents or with birth defects. The adult patients include accident victims; those suffering from crippling diseases, such as arthritis, and others recovering from strokes or heart attacks.

A recent survey indicated that nearly a tenth of the active cases being treated at the Center were either Sandians or members of their families.

### Retiree Helps

In 1962, the Center opened a Vocational Clinic to help handicapped individuals learn about work and the requirements for earning a living. Through per-



REHABILITATION CENTER Vice President R. G. Luckey (4100) encourages four-year-old Raymond Abeyta who is learning to walk with crutches. The children start out on special four-legged crutches and progress to the more conventional models.

sonal counseling and vocational guidance, this clinic has been able to place in jobs many handicapped persons who were previously dependent upon welfare payments.

In the clinic workshop, the participants carry out meaningful work under supervision of a workshop foreman. The handicapped individual is paid a basic hourly rate plus incentive pay for production above his particular vocational potential.

The current workshop foreman is Sterling McCollum, who retired from Sandia Laboratory in 1960. He determines how the specific task can best be performed by the individual (this often involves improvising a work-aid). He then instructs the individual and helps to develop a simulated work atmosphere. His experience in industry aids in analyzing the worker's problems.

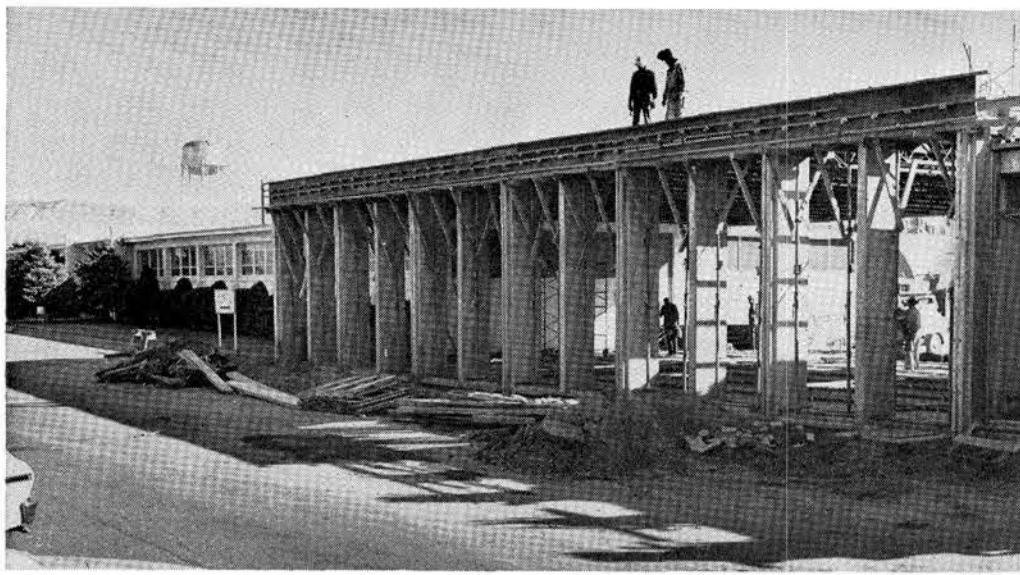
### Cratering Research

Contract work done at the Vocational Clinic includes such activities as placing jewelry on display cards, making pre-tied bows for holiday packages, and collating.

Sandia's Field Test E&C Division 7133 recently arranged a contract with the Rehabilitation Center for the accurate counting of thousands of colored glass and ceramic beads and metal pellets. Approximately 40 distinct types will be counted into packets and accurately weighed by the people at the clinic. The beads and pellets are used as tracers in underground cratering experiments conducted at Tonopah Test Range, Nev. (see LAB NEWS, Feb. 24, 1967). This is one type of work that can be carried out at the Vocational Center. L. J. Vortman (7111), R. D. Statler and V. A. Harris (both 7133) were instrumental in setting up this project.



COUNTING AND PACKAGING glass beads of various colors to be used in Sandia nuclear cratering experiments is a significant type of work carried out at the Rehabilitation Center's Vocational Clinic. Sterling McCollum (center), the workshop foreman, retired from Sandia Laboratory in 1960.



BRIDGING THE GAP between Bldgs. 832 and 831 is a new structure that will be used by employment and personnel organizations. The 3600-square-foot building is scheduled to be completed in March.

## Take Note

New officers of the Beta Alocsters Toastmasters Club 2524 were recently installed to serve until July. The officers include Lowell R. Hammonds (AEC/ALO), president; Robert P. Lowrey (AEC/ALO), educational vice president; H. E. Hansen (9311), administrative vice president; W. L. Miller (AEC/ALO), treasurer; and J. W. Cruickshank (AEC/ALO), sergeant-at-arms. The group meets at noon every Thursday at the Coronado Club. Sandians interested in obtaining additional information on opportunities available through participation in Toastmasters International may contact H. E. Hansen or E. H. Copeland (7332).

\* \* \*

Robert G. Luckey (4100) and J. R. Mike Coleman (4131-4) have been appointed to serve on the Accounting Advisory Committee of the Division of Managerial Control, College of Business Administration, University of New Mexico. The nine-member committee was recently formed to discuss UNM's existing program for accounting majors and to assist in establishing stronger communications between the Division of Managerial Control and the total business community.

During the committee's first meeting, Jan. 17, Mr. Luckey was appointed chairman for one year's term.

\* \* \*

N. F. Sinnott (7214) was elected vice chairman for 1968 of the IEEE Gyro and Accelerometer Panel. The panel is composed of members of organizations that use, evaluate, or manufacture gyroscopic inertial systems and inertial quality accelerometers. Its purpose is to provide industry with standard terminology, definitions, specification formats and test procedures for gyroscopes and accelerometers and to promote the full use of these standards. The panel meets bi-monthly in various parts of the United States and Canada with member companies alternately serving as hosts for each two-day meeting.

### Walter Westman to Serve as General Chairman of IDEP's Annual National Conference



Walter W. Westman (2435) has been named general chairman of the sixth national conference of the Interagency Data Exchange Program to be held at the Ambassador Hotel in Los Angeles May 1-3.

Sponsored by the Air Force, Navy, Army, NASA and the Contractor's Advisory Board, the conference is expected to attract some 200 registrants. Planned speakers will include The Honorable Thomas D. Morris, Assistant Secretary of Defense; Walter C. Christensen, Office of Secretary of Defense, Director of Defense Research and Engineering; and Lt. Gen. J. W. O'Neill, Commander, Space and Missile Systems Organization.

Walt, who is the Sandia IDEP representative, was re-elected executive secretary and a member of IDEP's Contractor Advisory Board at last year's conference in Houston.

IDEP is made up of 164 government agencies and contractors engaged in missile, space and related programs. It was formed to avoid duplication of tests of commercially-available components used in government programs.

The Fifth Annual Jaycee Invitational Indoor Track Meet opens tomorrow at Tingley Coliseum at 8 p.m. Top athletes in the nation will be competing, according to G. A. Hauer (5541), Albuquerque Jaycee vice president, including eight world record holders trying to break their own records. Tickets (\$2.50 for reserved, \$1.50 for adult general admission, and \$1 for children) are available at the box office or from any Jaycee.

\* \* \*

Frank J. Ortiz, Jr., (4121) spoke on "Accounting in South America" at a meeting of the Albuquerque Chapter, National Association of Accountants on Jan. 18 at the Fez Club. Frank, who recently completed a technical assistance project in Ecuador as part of a five-man team under the Government Affairs Institute of Washington, D.C., discussed the project, status of accounting in Ecuador, and the needs and opportunities in technical assistance projects overseas. Approximately 145 members and guests attended the meeting.

\* \* \*

The Sandia Employees Golf Association (Ladies group) will hold its annual membership meeting Monday, Feb. 5, at noon in Rm. 229, Bldg. 802. All Sandia Laboratory and AEC women who play golf or who are interested in the sport are invited to attend.

In the spring, league play is scheduled on the short nine, once a week after work, and on the regulation 18, every other Saturday at Los Altos golf course. In addition, tournaments are held throughout the season in Albuquerque, Socorro and Los Alamos. Last year some 50 women golfers were members of the association.

Officers for the forthcoming season are Maxine Stephens (3341), president; Eileen Zemka (2234), vice president; Wanda Bishop (3341), secretary; Donna Yapple (3126), treasurer; Alma Mischke (4152), tournament chairman; Sybil Milligan (9412), handicap chairman.

\* \* \*

Sharpshooters interested in participating in the forthcoming rifle and pistol matches sponsored by the National Industrial Recreation Association and the National Rifle Association are asked to contact Dick Vivian (1611) at 264-3759 (home tel. 299-1785).

"We must know ahead of time how many individuals will shoot so that we can send in for the targets," he explains. The shooting is held on Sandia Base ranges, and the targets must be mailed to contest headquarters by May 1 for scoring.

Last year three teams from Sandia Laboratory won the regional competitions for .22 rifle, .22 pistol and CO<sub>2</sub> pistols; and R. A. Davis (2212) placed eighth nationally. Eight states and Mexico make up this region.

\* \* \*

Members of the Rio Grande Horse Association installed James D. Shreve (5234) as president for the coming year. The group has about 160 members, and sponsors nine monthly horse shows at the Bernalillo County Sheriff's Posse arena and a four-day all-breed show at the State Fair Grounds.

\* \* \*

The board of directors of the Albuquerque Chamber of Commerce this month approved appointments to its various committee chairmanships and executive committees. R. B. Powell, vice president 3000, was named to the Chamber's executive committee and was also designated chairman of the education committee.

\* \* \*

W. B. Gardner (9423) and E. G. Thurman (9426) will be co-chairmen of a seminar session during a meeting of the American Association of Industrial Management in New York City Jan. 29-31. Title of the session is "Personnel Functions Using Data Processing."

### Standard Accepted by ASTM

## New Fixture Designed by Ed Dlouhy Speeds up Testing of Adhesives

When a "do-it-yourselfer" applies glue to mend a broken vase, the thickness of the sticky stuff is not a concern. He spreads it on generously enough to do the job.

At a research and development laboratory, however, adhesives are a major consideration in thin film technology and other electronic packaging applications. Here, the electrical characteristics, particularly resistivity, of the adhesives are as important as their bonding qualities and are directly related to the thickness of the adhesive.

Since there are hundreds of different adhesives available and thickness varies in applications from .001 inch up to as much as one-half inch, somebody had to compile data tables of electrical characteristics—a time-consuming and tedious job. The information, however, is essential in evaluating and selecting the proper adhesive for a specific application.

Ed G. Dlouhy (2213-1) has designed a new fixture which takes tedium out of preparing adhesives for electrical testing of adhesive bonds. The fixture has found widespread use at Sandia and other AEC agencies and has been accepted by the American Society for Testing Materials as part of a standard test method.

Under the old method, the adhesive bond thickness between two standard tensile adhesion plugs was carefully measured, one setup at a time, using a complicated fixture.

With the new fixture, however, the precise thickness of adhesive can be set quickly, and as many as 10 tests can be performed at one time. The fixture is a relatively simple device and considerably less expensive to produce than ones previously used.

Key feature of the fixture is the way that the tensile plugs can be fastened to maintain accurate spacing.

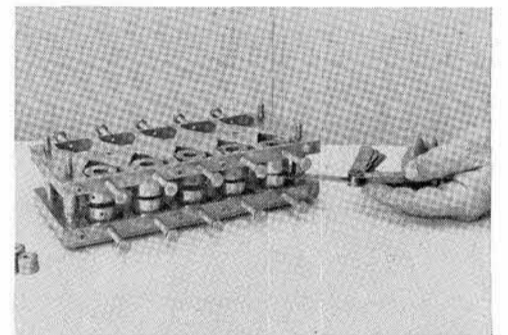
The two halves of the fixture, when bolted together, provide a rigid, precisely aligned base for positioning the movable plugs. (Ed specified in his design that the two halves be match-machined together to assure perfect alignment of all locating holes.) A feeler gage is inserted between opposing plugs to set the spacing needed. After the gage is inserted, the opposing plugs are tightened into position with screws.

The two halves of the fixture are then separated, adhesive is applied to the plugs, and the halves are bolted together, forcing excess adhesive from between the plugs. The adhesive is then given the proper "cure," and the fixture, with specimens, is ready for standard electrical tests. (Current is applied through the plugs to measure resistivity.)

The fixture also controls the amount of



ED DLOUHY (2213), left, and Nick DeLollis (1133) display two halves of a new fixture used in preparing precise thicknesses of adhesive bonds for electrical characteristics testing. The halves are match-machined together to assure perfect alignment of positioning holes.



FEELER GAGE inserted between opposing tensile plugs provides precise spacing. Ten specimens can be prepared at one time for adhesive bond testing.

adhesive in a given test for qualities of strength, flexibility and rigidity.

Ed designed the fixture at the request of Nick J. DeLollis of Sandia's Adhesives Laboratory (1133). Nick, a member of Committee D-14 of the American Society for Testing of Material, prepared the Test Method description which resulted in the committee's acceptance of the fixture as part of a national standard for testing adhesives.

## Authors

Bruno Morosin (5131), "An X-ray Diffraction Study on Nickel (II) Chloride Dihydrate," Vol. 23, page 63, ACTA CRYSTALLOGRAPHICA; with E. J. Graeber (1122), "Crystal Structure of Tetramethylammonium Manganese (II) Chloride," Vol. 23, page 766, ACTA CRYSTALLOGRAPHICA.

J. H. Smelser (7251) and D. M. Morrison (2451), "Voltmeter or Counter Buffer," August issue, ELECTRONIC DESIGN.

J. H. Renken (5231), "Legendre Polynomial Expansion for the Klein-Nishina Formula," Vol. 38, page 4925, JOURNAL OF APPLIED PHYSICS.

A. D. Swain (2152), "Some Limitations in Using the Simple Multiplicative Model in Behavior Quantification," Aerospace Medical Research Laboratories report on the Symposium on Reliability of Human Performance in Work.

V. K. Smith (9226), "A Method of Determining Some Geological Parameters of the Surface of Planets," Proceedings of the American Astronautical Society.

Albert Narath (5150), "Nuclear Magnetic Relaxation in the Transition Metals Scandium, Yttrium, Lanthanum, and Yttrium Dihydride," Vol. 25-A, page 49, PHYSICS LETTERS; "Nuclear Spin-Lattice Relaxation in Hexagonal Transition Metals: Titanium," Vol. 162, page 320, PHYSICAL REVIEW.

D. M. Mattox (1132), "Surfaces and Interfaces—A Technological Frontier," Fall issue, BLAST (Albuquerque Section, IEEE).

D. C. Wallace (5155), "Thermoelasticity of Stressed Materials and Comparison of Various Elastic Constants," October issue, PHYSICAL REVIEW.

H. J. Stein (5211), "Electrical Studies of Neutron-Irradiated n-Type Si: Defect Structure and Annealing," November issue, PHYSICAL REVIEW; with F. L. Vook (5211), "Electrical Studies of Electron-Irradiated n-Type Si: Impurity and Irradiation-Temperature Dependence," November issue, PHYSICAL REVIEW.

R. E. Nettleton (5155), "Second-Order Renormalization and Phase Stability in Strontium Titanate," December issue, ANNALEN DER PHYSIK; "Statistical Perturbation Theory of Order-Disorder Ferromagnets: Zeroth Approximation," Vol. 24, page 561, PHYSICA STATUS SOLIDI; "Effective Mass of 180° Domain Wall in Single Crystal Barium Titanate," Vol. 22, page 1375, JOURNAL OF THE PHYSICAL SOCIETY OF JAPAN.

W. J. O'Sullivan and J. E. Schirber (5151), "Experimental Determination of the g Factor in Metallic Zn," October issue, PHYSICAL REVIEW; with J. R. Anderson (Sandia consultant) and D. E. Soule, Douglas Advanced Research Laboratories, "Effect of Pressure on the Fermi Surface of Graphite," December issue, PHYSICAL REVIEW.

W. E. Warren (5261) and Prof. J. A. Weese of the University of Denver, "A Note on the Axisymmetric Thermoelastic Problem in Bispherical Coordinates," December issue, JOURNAL OF APPLIED MECHANICS.

C. M. Percival (5133), "Laser Generated Stress Waves in a Dispersive Elastic Rod," December issue, APPLIED PHYSICS LETTERS.

## Ocean Racing Avocation of SCLL Consultant Physician

Do you have a strong stomach and a weak mind?

If you do, you might enjoy ocean racing says Dr. Max W. Biggs, Livermore Laboratory's consultant physician (8215).

"The days aboard are devoted exclusively to moving the boat. It's hard, frequently frustrating work day and night; but if you can stand it, it's the acme of pleasure."

Sailing in the second International Yacht Race from Long Beach, Calif., to La Paz, Mexico, Dr. Biggs with four other crewmen and skipper took second place in Class D. The 41-foot, sloop-rigged Mutineer was their home for the nine-day, 950-mile race.

"Everyone is eager to help keep her well-sailed the first few days," relates Dr. Biggs, "but as time goes on it takes sheer endurance to keep the boat moving at peak performance. Races are won in the wee, dark hours of the morning and when the wind is fluky and changeable."

Preparations for the race began months in advance. Two weeks before the scheduled start of the race, the crew sailed the boat south from its home port, Richmond, to Long Beach.

"Frequent wind shifts—characteristic of the La Paz race—require numerous sail changes. The helmsman is changed every 30 minutes to ensure attentive steering. The galley chores are rotated among the crewmen, and each works hard to prove the adage, 'God sends food and the devil supplies the cooks.' At sea, at least two men are topside at all times. We 'dog the watches' which assures that one man doesn't have the same four-hour watch throughout the trip. Trying to keep the Mutineer at maximum speed and aimed in the optimum direction doesn't give you time to catch up on your reading," says Dr. Biggs.

The U.S. Coast Guard cutter Morris escorted the 25 boats on the La Paz race. Although it has no official interest in the race, the Coast Guard has found that accompanying an ocean racing fleet provides a good training exercise. During the cruise they launch boats at sea, practice radio

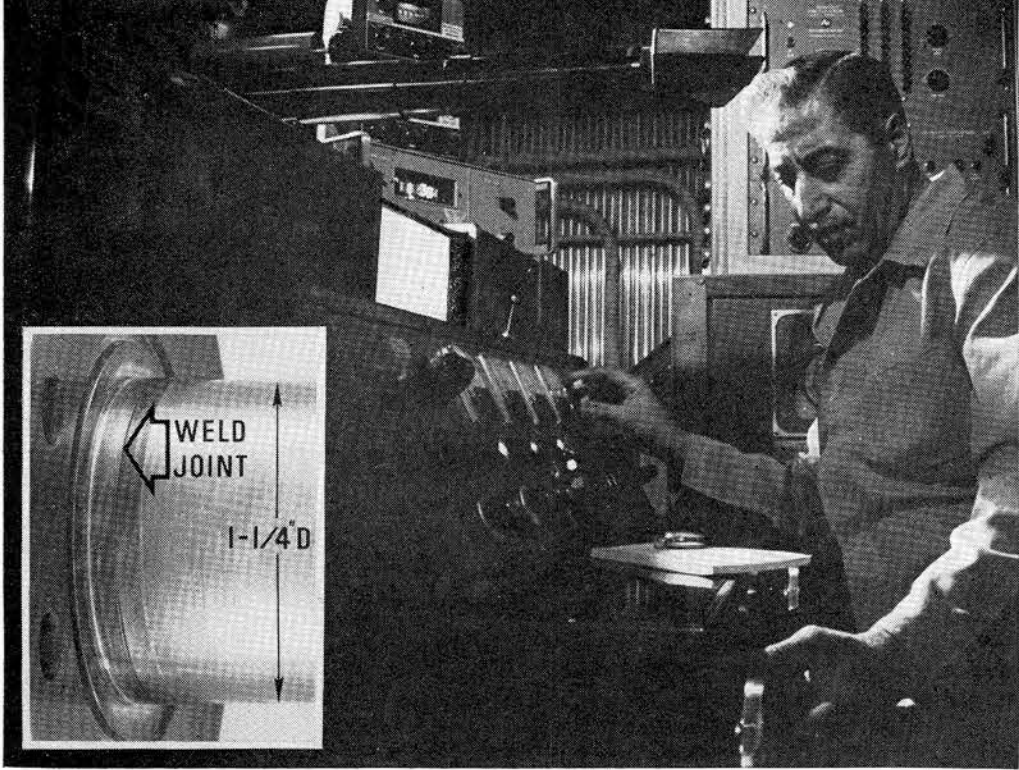
communication under less than ideal conditions, and gain experience locating small boats at sea.

Perhaps the high point of the race-day was the morning roll call conducted by radiomen aboard the Morris. During roll call each vessel reported its position (or where it thought it was) to the cutter. This report was heard by all contestants. The positions of competitors were then plotted to see what had happened in the past 24 hours. Once underway the fleet had quickly spread out and only occasionally did one acutely see a competitor. The navigator on each boat relied on celestial navigation primarily (race rules prohibit the use of radar). Each night there was a radio bed check with the Morris to determine that no serious trouble had developed among the boats in the fleet.

One of the biggest hazards of ocean racing is falling or being knocked overboard—particularly at night. "If you are running downwind with a spinnaker set, it isn't easy to turn around and pick someone up," says Dr. Biggs. "It is very difficult to return to where you were at sea when you lack a coast line to give any reference points. If a man should go overboard, safety gear is thrown after him immediately (this consists of a life preserver, marker buoy and strobe light for night use). The man in the water and the yacht make their way to the marker buoy and light. Without such aids, chances of finding a man are disturbingly remote." Dr. Biggs recalls an incident in the Trans-Pacific Race (Los Angeles to Honolulu) when a man spent more than 24 hours in the water before he was rescued—and then only by a stroke of luck.

Post-race festivities consisted of a trophy dinner, renewal of friendships, and, according to Dr. Biggs, "endless discussions of what might have been."

The crew then returned to San Francisco by plane, and the Mutineer and her skipper remained at La Paz in the Gulf of California for several months of cruising "in the most beautiful sailing waters in the world," according to Dr. Biggs.



ELECTRON BEAM WELDER at Livermore Laboratory is being adjusted by Tom Dadian (8142) to obtain the parameters necessary to braze a ten-thousandths-of-an-inch thick copper shell to one-and-one-half inch thick stainless steel mounting flange without any additional filler material (see inset). Recently installed, the equipment is capable of joining dissimilar materials with a minimum of distortion to a workpiece of its material content. A vacuum chamber—presently accommodating parts 36 inches wide, 36 inches high and 52 inches long—provides a contamination-free environment.

## Take Note

Chabot College, in cooperation with the annual Great Decisions program sponsored nationally by the nonpartisan Foreign Policy Association, is coordinating discussion groups for southern Alameda County residents, starting in February.

Individuals or organizations interested in discussion groups at the local level may contact the Chabot College Community Services Office, Mrs. Raymond Baker, tel. 782-3000 or 582-8167.

KQED, the Bay Area's educational television channel, will present the first in a weekly series of eight half-hour programs on Great Decisions at 8:30, Feb. 7. United Press International news service is also providing a series of eight articles to newspapers on Great Decisions topics.

The monthly meeting of the East Bay Chapter of the American Society of Certified Engineering Technicians (ASCET) will be held at 7:30 p.m. Friday, Feb. 9, at Livermore's Public Library.

Employees interested in joining ASCET are encouraged to attend this meeting. An explanation of the qualifications required and preparation of applications will be discussed.

ASCET encourages engineering technicians to obtain national certification of their technical qualifications and work experience. The certification program is sponsored by the National Society of Professional Engineers. Since it received its charter in 1966, Livermore Laboratory's membership in the local ASCET chapter has increased from four certified technicians to 24.

Further information about ASCET may be obtained from Jim Bauman (8121) or Loren Converse (8112-1).

## Livermore Laboratory Colloquium Feb. 5 Features Physics Film

The Feb. 5 Livermore Laboratory Colloquium will feature, "Strangeness Minus Three," a film on the physics and physicists shaping our philosophical ideas about the ultimate structure of matter. Produced by British Broadcasting Company TV Enterprises, the film tells the story behind the dramatic search for the elementary particle cryptically named "Omega-minus."

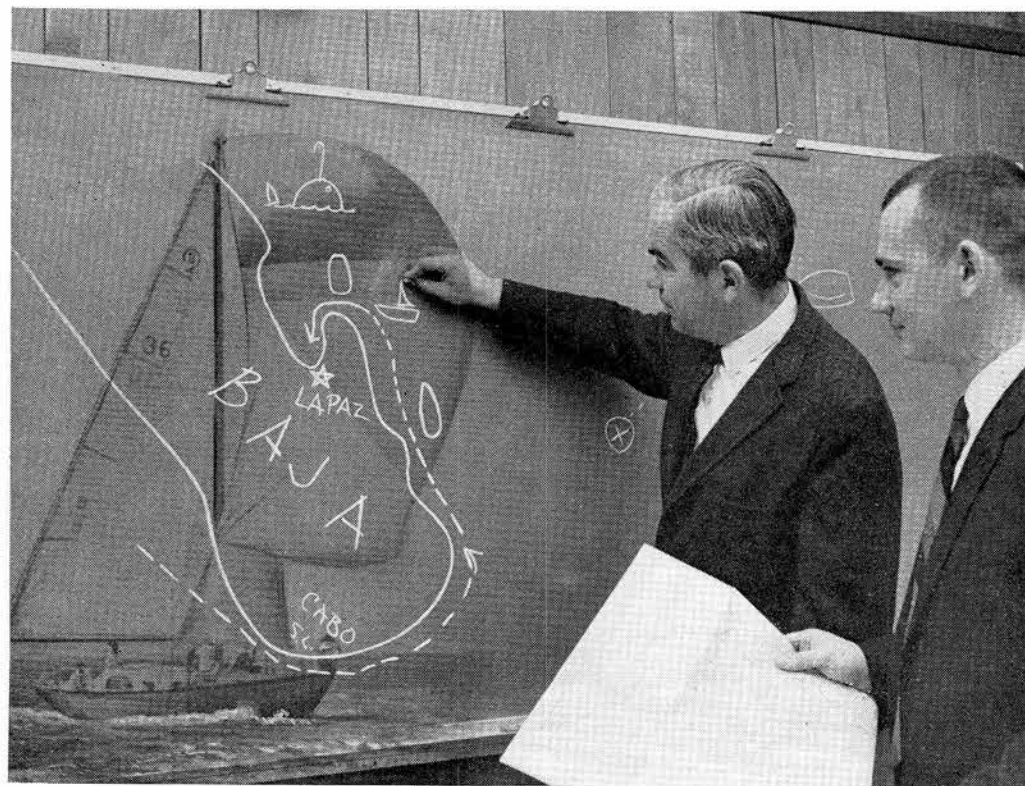
In the introduction, Dr. Richard P. Feynman, a California Institute of Technology theoretical physicist and recent Nobel Prize winner, describes the background of particle physics against which Drs. Murray Gell-Mann and Yuval Ne'eman, also Cal/Tech physicists, put forward a daring theory predicting the existence of the Omega-minus. Highly sophisticated experiments using the world's largest particle accelerators were undertaken at the Brookhaven National Laboratory on Long Island and at CERN in Geneva, Switzerland, in a race to test this new theory. After two years and tens of thousands of bubble-chamber photographs, the Brookhaven team, under the direction of Dr. Nicholas P. Samios, was successful.

In informal interviews, Drs. Samios, Gell-Mann, and Ne'eman tell their own personal stories. At the end, Dr. Feynman interprets the importance of the discovery and reflects on the underlying symmetry in the laws of nature.

Further information concerning the colloquium is posted on the SCLL bulletin boards. J. A. Mogford (8149) is serving as host.



LIVERMORE LABORATORY REFLECTIONS—1967. Rich Cline (8124) and Iona Ratcliff (8117) review the current poster displayed on Public Information Division bulletin board in Bldg. 912. The poster highlights 1967 happenings at SCLL as they were depicted on the Livermore page of the LAB NEWS during the year.



DESCRIBING THE POSITION of the Mutineer during the final stages of the recent International Yacht Race from Long Beach, Calif. to La Paz, Mexico, is Dr. Max W. Biggs, consultant physician at Sandia's Livermore Laboratory (8215). Listening with a nautical ear and chart in hand is W. L. (Bill) Schultz (8119), who has sailed with Dr. Biggs in other events.

### Sympathy

To Dave Bray (8113) for the death of his father-in-law in Coos Bay, Ore., Jan. 1.

To Jim Galt (8112) for the death of his father-in-law in Campbell, Calif., Dec. 17.

To Greg Jones (8252) for the death of his father in Stockton, Calif., Dec. 21.

To Charles Shanabarger (8125) for the death of his father in Livermore, Dec. 3.

To Lorraine Stamer (8234) for the death of her father in Hartley, Iowa, Dec. 26.

### Welcome . . . Newcomers

Dec. 23 - Jan. 16

<b>California</b>	
Oscar H. Criner, III, San Francisco	8149
Francis H. Frederick, Jr., Berkeley	8158
*Joan N. Tucker, Livermore	8235
*Robert K. Pierce, San Lorenzo	8151
<b>Missouri</b>	
*Michael T. Ferrario, Florissant	8252
<b>Transfers from Albuquerque</b>	
Joseph J. Bradshaw	8128
Roy E. Dising	8132
Wallace Ray Green	8159
Walter W. Troy	8236

\* Denotes rehired



BUDAPEST'S main street, Leninstrasse, was crowded with pedestrians during the noonday, but Gus Simmons (5612) counted only four cars and a bus on the six-lane thoroughfare.

## Travel in Hungary Is Difficult But Scientific Interest Is Great

Relatively few Americans travel in Hungary, and even fewer have an opportunity to attend technical conferences in this Communist country. Gus Simmons (5612) has done both.

He presented a paper on "Correlation Properties of Binary Code Sequences" at the International Colloquium on Information Theory, held in Hungary this fall.

Even getting into Hungary was an experience. The train Gus boarded in Vienna, Austria, was electrified and on schedule. At the border, the engine was exchanged for an old fashioned steam choo-choo. From there to Budapest, armed guards rode "shotgun" in the vestibule; and at the marshalling yard of the main railroad center, loud speakers warned passengers in four languages, "Do not dismount from your car."

A government tourist office "Ibusz"—apparently patterned after the Soviet "In-tourist"—keeps the foreign visitor well in hand. Passports are turned over to the agency, which in effect limits the tourist to travel only to the next checkpoint. "Meals and hotel rooms are paid for in advance and you really have no freedom to change once you're there," Gus discovered. For example, he wanted to attend a concert in Budapest and inquired about a ticket at the hotel desk. "Oh, no," the desk clerk said, "it's impossible unless you have made plans in advance through Ibusz." Not to be daunted, Gus went to the concert hall's boxoffice where an older couple to whom he spoke German helped him obtain a ticket.

### Friendliest People

"The Hungarians were the friendliest and most helpful people I have ever encountered," he recalled. "Although the majority appear to be desperately poor, complete strangers would insist upon paying for my glass of tea at one of the stand-up tea shops as soon as they recognized that I was a foreigner. Unless they spoke some English or German, however, our 'conversation' had to be in sign language. But even by that method I soon found that New York was the only city in the United States most people could name.

"Aided by several city maps, I walked as far as possible and looked in many shop windows with the intention of buying presents for my family."

### Low Salaries

The average working man makes less than \$100 a month, and Gus met a mathematician who had a doctoral degree and was a member of the Hungarian Academy of Science whose salary was \$150 a month. "This man had to save for three years to

have enough money to get married," Gus said. "I've initiated arrangements for him to spend a year at the University of New Mexico as an assistant professor, but his wife will have to remain in Hungary while he's here."

The international colloquium was held at the Kossuth Lajos University in Debrecen, the third largest city in Hungary, which is located near both the Russian and Romanian borders. Debrecen has a population of 200,000, three universities and a technical school, but no taxis or movie theaters. Gus described the Kossuth Lajos campus as "very beautiful with its acres of formal gardens, fountains and black marble statues."

"Attendees at the colloquium were most enthusiastic and, as a courtesy to the British and the dozen Americans in attendance, all except two of the Hungarian and Russian technical papers were presented in English. Those two scientists didn't speak English," Gus recalls. About 300 persons attended the sessions. Something unusual in the handling of technical symposia occurred the last afternoon. Chairman Renyi asked visitors to present any research or information problem that had particularly puzzled them. "Several persons responded," Gus says, "and first thing there were three or four persons at each blackboard working on unrelated problems." The published proceedings of the colloquium will include all of the technical papers presented—and also the less-formally presented problems discussed during the last session.

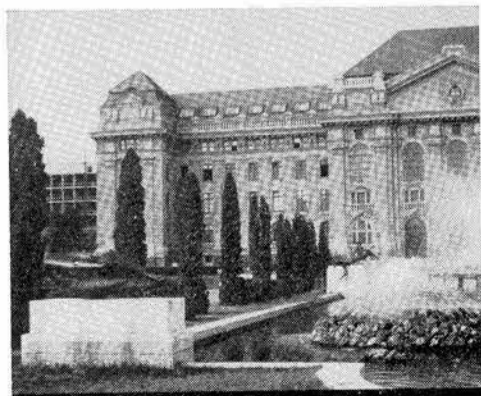
"Most Hungarian research is in theoretical physics and mathematics," Gus noted, "probably because not as much money is needed for research and equipment in these fields. Their work is of superb quality."

### Critical of Government

Here again at the university the people were very friendly, but as Gus observed, "The graduate students were so outspokenly critical of their government, I was almost afraid to talk to them."

Leaving Debrecen was another experience. Gus left the city by car with Professor J. M. Garduno, a Mexican mathematician now with the Imperial College of Science and Technology in England. There were only two gas stations in the city (all are state owned) and at each there was a long line of cars and tractors (mostly the latter). As each vehicle was serviced, the other motorists would get out and push their car or tractor a few feet. Gasoline is 75 cents a gallon in Hungary. Outside the city, gasoline could be found mainly at collective farms. The roads were not marked and driving at night was dangerous: much of the traffic consisted of horsedrawn wagons laden with produce, with a lantern serving as a taillight.

Two kilometers from the Hungarian-Austrian border the first of three checkpoints was encountered. Each had a concrete barrier, search lights, and manned machine guns. The travelers proceeded through passport, luggage, and currency inspections. As Gus put it, "It was nice to get into Austria."



KOSSUTH LAJOS UNIVERSITY in Debrecen, Hungary, once the largest Calvinist college in Western Europe, was the site of the International Colloquium on Information Theory attended by Gus Simmons (5612).

## Three Employees Serving as State Representatives in Current Session

The Second Session of the 28th New Mexico Legislature now in progress in Santa Fe is of particular importance to three Sandia employees. They are representing approximately 51,000 Bernalillo County residents on the floor of the House of Representatives.

Representatives James A. Caudell (2223), Raymond Garcia (3462-3) and Thomas W. Hoover (5636) left the Laboratory last week to participate in the legislative session that started at noon Jan. 16 and is scheduled to finish at noon Feb. 15.

Rep. Hoover is currently serving his second two-year term. Representatives Garcia and Caudell are serving their first term.

Rep. Caudell (Rep., District 18) has some 11,000 constituents living in the far Northeast Heights and mountain areas. He is a member of the Interim Examining and Licensing Committee, Enrolling and Engrossing Committee, and Legislative Edu-

cation and Labor Committees.

There are approximately 15,000 constituents in Rep. Garcia's (Dem., District 3) area in the Southwest Valley. He is a member of the Appropriations and Finance Committee, the Public Affairs Committee, and the Enrolling and Engrossing Committee.

Rep. Hoover (Rep., District 18) has about 25,000 constituents in the Northeast Heights. He serves on the Appropriations and Finance Committee, the Privileges and Elections Committee, and the Interim Legislative Finance Committee.

The three representatives plan on using their accrued vacation time and then taking the remainder of the time off from their jobs at Sandia without pay to participate in the session. During legislative sessions, each legislator receives an allowance of \$20 per day from the state, which generally covers living expenses in Santa Fe.



STATE REPRESENTATIVES (l to r) Raymond Garcia (3462-3), Thomas W. Hoover (5636) and James A. Caudell (2223) paused in front of Bldg. 800 before departing for Santa Fe.

## Speakers

E. D. Jones (5151), "Knight Shift Measurements in Rare Earth Intermetallic Compounds," seminar at Los Alamos Scientific Laboratory, Dec. 20, Los Alamos.

H. R. MacDougall (1541), F. Stebbins, (NASA, Houston), J. A. Strickland and W. E. Haisler (both of Texas A&M), "Non-linear Analysis of Shells of Revolution by the Matrix Displacement Method," Sixth AIAA Aerospace Sciences Meeting, Jan. 22-24, New York City.

R. R. Prairie (2153) and W. J. Zimmer (5263), "A Continuous Acceptance Sampling Procedure for Variables Based on Cumulative Sums," joint annual meeting of the Institute of Mathematical Statistics and American Statistical Association, Dec. 27-30, Washington, D.C.

H. H. Wicke and J. M. Worrell (both 5261), "Quasi-Hereditary Properties, Baire Category, and Non-First-Countable Structure," 74th annual meeting of the American Mathematical Society, Jan. 23-27, San Francisco.

N. A. Cordova (4231), "Electronics Work as a Career," Menaul high school, Jan. 5.

Mary Campbell (3126), "Secretarial Work as a Career," Menaul high school, Jan. 5.

J. W. McKiernan (9331), "Engineering Careers," Menaul high school, Jan. 5.

J. W. Reed (7111), "Sonic Booms," South Valley Optimist Club, Jan. 10.

H. D. Sivinski (2570), "Man in the Space Environment," University of Colorado student section, ASME, Jan. 10, Boulder, Colo.

A. D. Swain (2152), "Human Factors Engineering," Idaho-Montana section, ASME, Jan. 16, Idaho Falls, Ida., and Jan. 19, UNM student section of ASME.

C. S. Johnson (7252), "The Generation Gap," St. Vincent's Academy, Jan. 16.

N. S. Hey (3431), "Rolamite," Highland Kiwanis Club, Jan. 16.

## Tech Writers Present Course At UNM Community College

Twelve Sandia employees will present a 12-week technical communication course in the spring semester of the University of New Mexico Community College. The course will cover such subjects as: writer and editor qualifications, technical illustrating, audio-visual presentations, technical publications management, technical publishing and all phases of technical writing. Practical work is included in the course.

This will be the 5th annual course sponsored by the Albuquerque Chapter of the Society of Technical Writers and Publishers. Sandia employees lecturing are G. C. Holloway (1620), D. H. Emrick (1622), W. F. Carstens (3410), C. K. Lumpkin (3411), R. K. Strome (3463), W. J. Waggoner (3413), R. F. Utter (3132), A. P. Lites (1621), D. L. Benoist (1622), R. L. Manhart (1623) and R. P. Lewis, Jr. (1622).

The class will meet Wednesdays from 7-9 p.m., Feb. 14 through May 8, in Rm. 109 of Mitchell Hall. There are no prerequisites for the course. Community College registration will be conducted on Monday, Feb. 5, from 1-7:30 p.m. and Tuesday, Feb. 6, from 9 a.m. to 6:30 p.m. in Rm. 209 of the UNM Administration Bldg. Tuition is \$15.

## Welcome . . . Newcomers

Jan. 8 - 19

Albuquerque	
Celina M. Marquez	3126
*Betty Jo Morrow	3126
Gloria E. Reid	3126
June Ann Swietlik	3126
Texas	
*Robert D. Nasby, Austin	9332
* retired	

PAGE FOUR

JANUARY 26, 1968

SANDIA LAB NEWS

## Service Awards

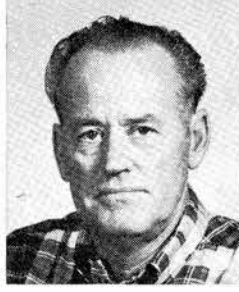
### 20 Years



P. H. Adams  
7323



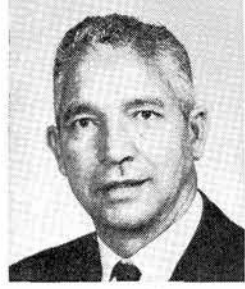
Patty Atkins  
4131



M. J. Blaylock  
4614



Pat Farley  
3126



Bernardo Gallegos  
4212



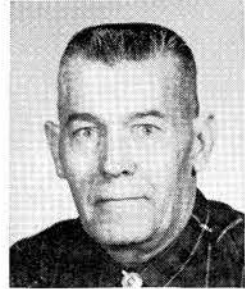
C. E. Garcia  
4573



R. S. Hewitt  
2212



W. G. Merritt  
2543



W. E. Myers  
4221



R. A. Richards  
7121



H. A. Tendall  
1544

### 15 Years



J. G. Comiskey  
4613



N. J. Eich  
1139



H. B. Evans  
4632



C. J. King  
9231



L. E. Myers  
9225



Evelyn Ricard  
3252



E. J. Szyper  
1431



Rosemary Teasdale  
3126



I. B. Ward  
8119



O. R. Thomas  
8117



H. L. Webster  
2411

### 10 Years

Jan. 26 - Feb. 8

V. O. Easley 4543, M. G. Weber 4123, D. W. Davis 4137, F. K. MacPherson 3421, W. W. Graving 3464, Mary M. James 4153, K. K. Hykes 4544, H. V. Fisher, Jr. 7222, G. T. Gay 9211, J. C. Stathis 9414, Ethel L. Lonner 3126, Harkey Boling 3463, T. A. Sellers 9214, and W. B. Goldrick 9231.

PAGE SEVEN

JANUARY 26, 1968

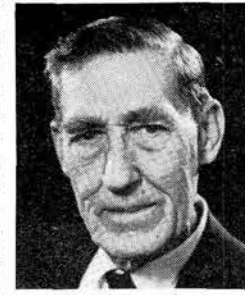
SANDIA LAB NEWS

## Retiring

Harold E. Crissey of Carpentry & Painting Section 4513-3 retires Jan. 31 after more than 19 years as a maintenance painter at Sandia. "When I was hired in September 1948," Harold says, "I was the only painter, and the supplies consisted of two colors of paint—black and white—and one size of paint brush. I have painted in every building at Sandia, and I wish I knew how many gallons of paint I've applied."

Mr. and Mrs. Crissey will continue to make their home in Albuquerque at 1602 Solano Dr. NE. Mrs. Crissey will retire from AEC/ALO in August and until then Harold says he has work to do at home and in the yard. "I'm even going to do a little painting for my neighbors," he says.

"When my wife retires, we will do some traveling. We also love to dance. In fact we hardly ever miss a chance to dance where there's good music. We are both looking forward to doing whatever we want to at our leisure."

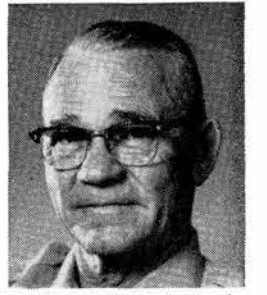


John Bashaw, a security guard in Patrol Division 3242, is retiring the end of the month. He is the first security guard to retire under Sandia's Retirement Plan.

John joined Sandia at Salton Sea in June 1952 and transferred to Sandia Laboratory in January 1960. He was employed in security work in Los Angeles before 1952.

"I'm 62 years old, and I decided it was to my advantage to take the opportunity Sandia offers with its early retirement plan. There are many things I want to do between now and the time I'm 65, when I would take regular retirement," John says. "I'm going to fish, hunt and travel. Photography is another of my hobbies."

Mr. and Mrs. Bashaw live at the Terrace Trailer Court at 9000 Zuni SE and will continue to reside in Albuquerque for another couple of years at least. "We haven't really made any definite plans," John says.



## Diabetes Screening Available to Families

The diabetes detection program offered by Sandia employees has proved worthwhile. Nine cases of diabetes, not previously known by the individuals involved, have been detected among the 1600 employees tested.

Now members of employees' families can take the same simple test.

On Feb. 8-11, the Albuquerque Jaycees will help to sponsor a diabetic detection drive at three locations: 1620 Griegos NW, 1111 Stanford NE, and at the Winrock Mall. The hours will be 9 a.m. to noon and 2-5 p.m. A drop of blood from the finger is all that is needed.

The program has the approval of the Bernalillo County Medical Society. Qualified medical technologists will donate their time to perform the quick, simple test. Jim Day of Sandia's Medical organization is one of these volunteers.

A charge of 50 cents per person tested will help to defray the costs. Children must be accompanied by their parents or have written permission from their parents.

If the blood sugar count is normal, the individual will be told immediately. If the count is higher than normal, he will be referred to his personal physician, who will receive a form letter giving the results of the test. Treatment will be prescribed as required.

Early detection is important!

## Death



Jose P. Sanchez, a helper in Mechanical Systems Section 4511-2, died Jan. 18 in an automobile accident. He was 38.

Injured in the crash, now hospitalized, were Don Lovato (4514) and Herminio Molina (4513).

Mr. Sanchez had been employed at Sandia Laboratory since April 1963.

Survivors include his widow, six sons and five daughters.

## Sympathy

To Julian Perea (4614-5) for the death of his mother, Dec. 23.

## SHOPPING CENTER

**CLASSIFIED ADVERTISING**  
Deadline: Friday noon prior to week of publication unless changed by holiday.  
A maximum of 125 ads will be accepted for each issue.

**RULES**

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Corporation and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

**FOR SALE**  
**REAL ESTATE**

TAKE OVER payments, G.I. \$91/mo., 4-bdr., carpeting, drapes, covered patio, garage, AC, walled yard, 224 Gen. Arnold NE. Johnson 299-5105.

4-BDR., dbl. fp, dbl. garage, 1 acre, fenced, coral, Bosque Park. Downs, 296-4710 or 265-0217.

2-BDR. HOME, utility rm., garage, low down, 5 1/4% FHA, \$68/mo., taxes, insurance included. Simmons, 296-2011.

TRADE large equity in mountain home for 3- or 4-bdr. home in NE Heights. Souther, 282-3841.

SNOW Executive model, 3-bdr., den, fp, DR, 1 3/4 baths, new carpet, assume low interest VA loan, low equity. Krumm, 299-2279.

MOUNTAIN HOME SITE, 12 miles from Wyoming & Central, terms available. Hoagland, 282-3825.

**MISCELLANEOUS**

KALMASTER automotive tuneup set, 4 meters, timing light, remote starter, all chrome w/case, \$150. Geilenfeldt, 256-7532.

DANISH modern divan, makes into 3/4 bed, \$25. Davis, 298-8559.

AMPLIFIER, Scott 260, solid state integrated, \$90. Boyes, 255-7170.

WESTERN SADDLE, black, \$45. Gubbels, 299-8089.

16' BOAT, Fiberglass, 80 hp Mercury, complete ski equipment, \$1395; guns: .22 single shot, .20 gauge double, 30.06 modified. Schwes, 255-9279.

PORTABLE type fireplace, includes pipes, etc., \$90. Loomis, 296-4395.

WOLLENSAK 3M stereo tape recorder and playback unit, model 1580. Hanson, 298-0637.

LaMARQUES clarinet & case, \$65; girl's bike, 26" Higgins, \$18. McGuire, 255-4361.

AKC Pomeranian female, 6 wks. old, \$100; Heath-kit solid state intercoms, \$50 pair; Lineman's boots, \$5. Stuart, 265-7315.

POLAROID print copier No. 230, for use w/camera models 80 & 80A. Filusch, 299-5932.

5 RUGS, green, \$600 value for \$150, all or part. Allen, 3225 Florida NE, 256-0290.

MOBILE HOME, 10' x 50' Atlas, 2 bdr., furnished, immediate possession. Guerin, 299-4677.

MAHOGANY hi-fi cabinet, 40" long x 18" deep by 29 1/2" high, \$15. Smith, 299-6873.

SPEAKER ENCLOSURES, matched walnut, bass reflex; plus full range speakers size: 31" wide, 25" high, 18" deep, retail \$300, now \$110 pair. Browning, 299-6384.

TRUNDLE BED, 2 mattresses, bookcase headboard, 39" wide, \$40; bed, box spring, mattress, 37" wide, \$15. Miller, 268-5992.

GE 21" console TV, B&W, \$50. Lysengen, 265-6804.

SKI RACK for VW sedan, \$6. Krenz, 298-0619.

GE canister sweeper, complete w/all attachments, \$30; kitchen table w/formica woodgrain top, 36" round w/10" leaf & 2 chairs, \$37.50. Smith, 299-1264.

WEIMARANER puppies, AKC registered, welped 12-17-67. Ebaugh, 298-2170 after 5.

COLEMAN 2-mantle lantern w/carrying caddy. Williams, 298-2671.

ELECTRIC RANGE, Kenmore, \$25. Joseph, 268-5414.

PIANO, Knobe upright grand, \$300. Beudet, 299-0849.

'48 CHEVY 216 motor-transmission; 30,000 short block, 20w; various parts from wreck, sell, trade for motorcycle engine-transmission. Lackey, 255-7901.

COMPTON'S pictured encyclopedia, '54 edition, complete set, \$20. Campbell, 255-2910.

CRAFTSMAN reciprocating power hack saw w/motor & stand, \$45. Meikle, 299-4640.

GOLF CLUBS, starter set, 2 woods, 5 irons. Menzel, 255-9960.

ANTIQUE, oval, mahogany dining table w/leaf, 4 straight & 2 arm Hepplewhite chairs, recently reupholstered, spacious buffet, \$585. Hook, 255-1897.

COSCO foldable highchair w/chrome tray & adjustable foot rest, \$10. Nissen, 298-9166.

GUITAR, electric & amplifier, less than 1 yr. old, \$50. Thayer, 299-3127.

BASSET PUPPIES, AKC registered, 9 wks. old, males & females, good stock. Boyd, 247-9448.

'60 FORD RADIATOR, 1 1/4" core, \$25. Lowe, 299-7725.

MONAURAL HI-FI, \$180 complete; Knight 30-watt amplifier, \$40; FM-AM tuner, \$40; electrostatic speaker system, \$80; Garrard 4-spd. changer, \$40. Church, 299-2175.

8:00 X 14" 5-lug rims w/new snow tire recaps, \$15. Kingsley, 299-1226.

GO CART, steel frame, balloon tires, w/engine \$20, w/engine \$10. Peterson, 256-7514.

CRAFTSMAN TABLE SAW, extra wide table, tilting arbor, 1hp motor, dados, shapers, extra blades; Craftsman skillsaw, heavy duty, extra blades, case. Keyser, 256-1285.

13' GARWAY HOMES camping trailer, 1963, sleeps 6, \$675. Akin, 299-4242.

CAMERA, Argoflex Model E, twin-lens reflex, f4.5 Vorex lenses, shutter speed to 1/200 second. leather case, \$20. Shieler, 344-8617.

STOCK RACK, 5 1/2 x 6 1/2' for '58 Ford 1/2-ton, \$75. Selph, 877-5737.

WINCHESTER .22 cal. rifle, Model 77. Schultz, 298-1076 after 5.

VARNEY HO train set, \$10; extra engines, \$4, \$8; HO cars, 50c, monorail set, \$4; microscope, \$4. Butler, 299-5626.

10x20 CARPORT or patio cover, factory made, will negotiate price. Kindschi, 256-0531.

8x10 WALL TENT, heavy construction, \$25. Swindle, 298-6158.

CHINESE MODERN stereo-radio-TV console; end tables; lamps; clock; candle holders; mitre saw; corner vice; electric staple gun; sprayer. Morewood, 299-1344.

GARRARD record changer w/audio Empire stereo cartridge & walnut base, diamond stylus, \$30. Blackmon, 298-2095.

DOUBLE BED w/walnut headboard, \$65; small tricycle, \$3; English racing bike, \$20. Chandler, 296-3525.

EARLY AMERICAN bookcase headboard bed w/Sealy box springs, mattress, matching dresser, all for \$135. Gardner, 296-1314.

ANTIQUE china closet, curved side glass panels, Ghion, 298-9514 after 5.

PING PONG table, folding roll-away type, \$20; 26" Hercules English 3-speed bicycle, \$20; HO Santa Fe freights, \$15 ea.; round patio table, \$5. Rayner, 299-7429.

SMITH & WESSON .38 revolver, Hy-Hunter .22 single action western style revolver, \$40 ea. Evenson, 344-7700.

METAL BOOKCASE, three-tone, three shelves, \$4; 2 floor lamps, 3-way, \$5 & \$7; professional type hair dryer, \$8. Bishop, 299-0649.

FISH HOUSING, 10-pal. bungalow w/central heat, AC, 5-gal. breeding cottage; books for fish landlords, \$15. Field, 345-1470.

CONN ORGAN, cost \$1000, sell for \$450; stereo FM-AM console, Olympic, walnut finish, \$125. Sumlin, 299-6137.

MOBILE HOME, 10x47 Magnolia 2-bdr., wood paneling, partly furnished, new AC, \$2295. Potts, 344-8938.

TIRE CHAINS, fit tire sizes 7:50x14, 6:70x15, 5:75x16, driven less than 10 miles, \$6. Kimball, 299-5527.

FULLY ENCLOSED 2-wheel trailer, 10' long, 5 1/2' wide, 4 1/2' high, steel frame, wood sides & top, \$85. Ernst, 344-8694.

THREE 8:25x14 tires, \$20. Somermeyer, 299-9271.

ADMIRAL 21" TV-radio-phono comb. in fine mahogany cabinet, \$65; pinball machine, \$25. Fite, 255-6945.

**CARS & TRUCKS**

'61 FALCON 4-dr. sedan, new battery, \$325. Harper, 298-0146 after 6.

'64 CHEVY II, 4-dr., 6-cyl. Warnick, 268-4122 after 5:30.

'55 FORD V8, 90,000 miles but only 2 owners, \$100. 1413 Guaymas NE, Houghton, 299-3386.

'48 ENGLISH FORD PREFECT, needs engine overhaul, parts available locally, make offer. Donohoe, 299-4076.

WILL TRADE '63 VW Sunroof for cabover camper. Wilson, 296-3455.

'61 CHEVROLET 2-dr. V-8, R&H, ST, \$495. Johnson, 255-2846.

'66 VW sedan, 27,500 miles, \$1350. Glover, 298-7302.

'65 GTO, burgundy, 4-spd.-Hurst, 360 hp, Positraction, radio console. Hoffer, 299-0795 evenings.

'55 BUICK Special, R&H, AC, power, new: brakes-front tires-battery, cash or trade for camp trailer. Cunkelman, 255-3244.

'64 FORD pickup, 3/4 ton, Custom cab, long wide bed, 4-spd., V8, R&H, heavy duty tires & suspension. Heames, 255-2291.

'60 ENGLISH FORD, radio, new tires & seatcovers, 25 mpg. Rose, 298-6238.

'65 CADILLAC sedan DeVille, all power, low mileage, one owner. Olson, 265-1898.

'54 JEEP station wagon, R&H, OD, new paint, \$300. Haskins, 282-3748.

'67 PONTIAC GTO, 4-spd., Posi-traction, tach, radio, console, PS, more extras, 7700 miles. Dellicker, 299-0795 evenings.

'50 GMC pickup ('53 engine), 4-spd. DeZeeuw, 296-1005.

'63 CHEVROLET Super Sport, 327 cu. in. V8, 4-spd., bucket seats, R&H, Van Hauen, 296-2531 after 5:30.

'64 CHEVROLET Impala 2-dr. HT, convertible, AT, red w/cream top, new brakes & tires, R&H. Hochrein, 268-7905 after 6.

'58 MG, hard-top coupe. Claassen, 255-4347.

'63 BUICK Special, 2-dr., new tires, standard shift. Oravec, 282-3667.

'67 SHELBY, dark green, 427 CID Ford engine, L 7,000 miles, 2-4 bbls., (hi-riser manifold), tuned headers, special clutch & rear end. Reif, 265-7264.

**FOR RENT**

3-BDR. HOUSE, clean, near Los Altos Golf Course, attached garage, walled yard. Patterson, 243-6219.

HOUSE, NE, 3-bdr., 1 3/4 bath, lg. LR, DR, family-size kitchen, garage, utility rm., screened-in porch, electric range furnished, \$120/mo. Barrett, 268-2963.

**WANTED**

WRECKED 50 or 90cc motorcycle or used engine & transmission. Cave, 299-5066.

2-METER ham transmitter or transceiver (roughly 10 watts AM). Woods, 296-4741.

JOIN CAR POOL as rider, vicinity Louisiana NE, Montgomery NE, Comanche NE, San Pedro NE or San Mateo NE. Cowham, 298-4249 after 5:30.

CUSHMAN Trailster or equivalent, reasonable. Jesse, 255-6446.

FEMALE to share furnished apt. starting Feb. 1. Ristine, 298-8383.

METRONOME, Vancil, 299-7211.

PARTY to do ironing in my home. Luckey, 299-8757.

RIDE from vicinity Montgomery & Moon to vicinity of 880. Przystas, 296-1943.

OUTBOARD MOTOR, 5hp or less. Kroth, 265-6254.

25HP outboard motor, electric start, in good condition. Erdman, 298-3097.

SHOTGUN, 20 ga., will consider any make or model. Sheard, 298-3373.

TUNER or receiver, stereo or monaural; enlarger for 35mm and 2 1/4 x 2 1/4 film. Rose, 298-6238.

5-BDR. HOUSE, trade 3-bdr. Roberson, pay difference. Rolleflex camera, shotgun, El Vado lake lot. Butler, 299-5626.

GAS LOG for fireplace. Chandler, 296-3323.

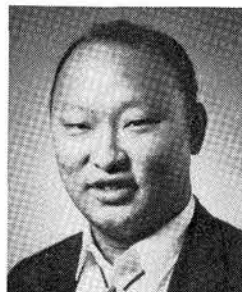
USED 20" or 26" boy's bicycle, good condition. Ronan, 299-9168.

**LOST AND FOUND**

LOST—Copper earring, Cross ballpoint pen, black leather glove, safety glasses, brown leather glove, single strand cultured pearls, \$6 currency. LOST AND FOUND, tel. 264-2757, Bldg. 610.

FOUND—Transistor radio, key ring w/keys & initial H, encyclopedia, key ring w/3 keys, large yellow earring, yellow darning type earring. LOST AND FOUND, tel. 264-2757, Bldg. 610.

## Education Is a Continuing Thing; Motivation Makes the Difference



Peter J. Chen is spending the next few months at Carnegie-Mellon University on a National Science Foundation fellowship. This pursuit of information is an extension of his basic philosophy about the value of education.

During three years at Sandia Laboratory, Pete has worked on problems in the field of continuum mechanics, first in Deformation of Structures Division 1142 and at present in Applied Mathematics Division I 5231.

This is a field in which one re-examines classical theories and formulates new theories from a rigorous mathematical standpoint. It dates back to 1945 and there are probably only a dozen top authorities in the country. Four of these men are in Pittsburgh at the Carnegie-Mellon University (Carnegie Institute of Technology and Mellon Institute were recently combined), including Professor Mortin E. Gurtin of the Department of Mathematics, who is a Sandia consultant. As a visiting research fellow, Pete will work with this professor on two research problems on thermodynamics and theories of heat conduction involving two temperatures, an extension of his studies here.

"The information gained in these studies could have direct application here," Pete says. "I'm glad my supervisors, Mike Norris and Howard Wicke, made possible for me to join the Mathematics Department and do research in this area."

"While on leave of absence I will have time to audit a few courses at the university, but mostly the science development grant will give me an opportunity to talk

over ideas with leading scholars in the field and to learn from them."

Pete was 12 years old when he first enrolled in school and he's strongly motivated when it comes to learning. "Education is the only thing short of a 'silver spoon' that can get you somewhere," he says. "It takes work, but there are so many opportunities."

Pete was born in December 1937 in Wuhu, a city up the Yangtze River near Nanking. In early 1938 the Chen family moved to the British Colony of Singapore via Shanghai. At that time both Wuhu and Shanghai were already under Japanese occupation, and special permission had to be obtained from the Japanese occupation forces in order to leave China.

Just before the Japanese takeover of Singapore, Pete, his mother, and his older brother and sister, fled via the Burma Road to Kweiyang in the mountainous region of southwestern China. Mr. Chen, as well as other able-bodied men, was prohibited by the British from leaving the beleaguered city.

Mrs. Chen and the young children remained in Kweiyang until the end of World War II. They went to Singapore for a short period and then moved back to Nanking (the Nationalist capital); but then the civil war in China necessitated their moving to Formosa in 1948. Finally, in 1950, the Chens settled in Singapore and it was then that Pete first enrolled in school.

During the years of frequent moves, Mrs. Chen, who is a graduate of the University of Shanghai, taught her children to read and write in Chinese and English and instructed them in other subjects. Their only tutor was for mathematical subjects. All three children later attended college.

Pete received his high school diploma in 1955 and, after some additional college preparatory training, he went to the University of Hawaii where he received his BA degree in mathematics in 1959 and then to the University of Washington for his MS degree in aeronautical engineering and PhD degree in engineering mechanics.

It was a matter of motivation—Mrs. Chen's and Pete's.

### Supervisory Appointments

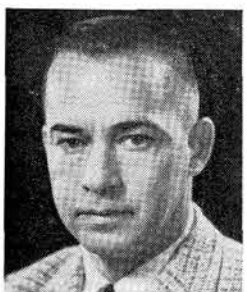


RICHARD H. BRAASCH to supervisor of the newly-created Division IV 5635 in Advanced Systems Development Department III, effective Feb. 1.

He joined the Laboratory in June 1960 and worked on advanced data systems while studying electrical engineering at the University of New Mexico under Sandia's Technical Development Program. In September 1965, he took an educational leave of absence to return to the university. He has been working on command and control systems in Division II 5612 since his return to Sandia in July 1966.

Dick received his BS and MS degrees from UNM in June 1960 and February 1962, respectively. In June 1966, he was awarded his PhD in electrical engineering from UNM.

He is a member of the Institute of Electrical and Electronics Engineers and Sigma Xi.



JOHN P. WEBER to supervisor of Explosive Components Division 1342, effective Jan. 1.

He has worked on the development of explosive systems and components, such as detonators and actuators, since he joined the Laboratory in November 1960.

John worked for Armour Research Foundation in Chicago for five years before he came to Albuquerque. There he was with a rocket and ballistics research group for about two years and the remainder of the time with an explosives research team.

From March 1953 to March 1955, he served with the Air Force as an atomic weapons officer and was discharged as a first lieutenant.

John received his BS degree in chemical engineering from the University of Wisconsin in January 1953. Between 1955 and 1960, he did some graduate work in chemical engineering and physics at Illinois Institute of Technology.

He is a member of the American Ordnance Association.

### Basic Nuclear Science Textbook Available

A new book on science, "Secrets of the Nucleus," designed to describe nuclear science to students at the high school level, has been produced by the National Science Teachers Association under contract with the Atomic Energy Commission. Although the book was written especially for secondary school students, it should be useful for the non-technical adult who wants to know more about nuclear research.

Co-authors are J. S. Levinger, Professor of Physics at Rensselaer Polytechnic Institute, and George Carr, Assistant Professor of Physics and Physical Science at Lowell State College.

Copies of the book may be purchased for 50 cents each from Scholastic Book Services, 904 Sylvan Ave., Englewood Cliffs, N.J., 07632.

### Joe Suazo Top Bowler In Sandia Tournament

Joe Suazo (9323) set a new record in the recent Fourth Annual Handicap Tournament. Joe bowled 1960 with handicap in nine games to take the All Events crown. His was the highest score in this event since the Sandia tournament has been played. Scratch All Events winner was Jim Tichenor (1317) with 1764.

Joe was also a member of the winning team. Other members were Carl Longfellow (2213), Sam Bolin (1344), Tom Hermann (2211) and Jack Bahlman (2213). The team scored 3078 to emerge on top of the other 36 teams competing.

Leo Bressan (2412) took the scratch singles championship with a score of 622. Norm Elliott (2411) took the handicap title with 678.

In doubles, the champs were Bob Seavey (2412) and Jim Rogers (1427) who took the scratch title with 1159 and the handicap crown with 1288.

A special award went to Bob Balthaser (2131) for closing 30 frames.

Tournament directors were Bob James (3134) and Dutch Eisold (2211).



STAND PAT, BLUFF, break the bank, etc., tomorrow at the Coronado Club's Casino Night event. Play money will be used but big winners, possibly Al Mares (4362), will collect real prizes. Lady Luck is Cecelia Cooke (3126/7214).

## Coronado Club Schedules Casino Night With Fun and Games Manana

Tomorrow's Casino Night is designed by the Coronado Club Board of Directors to provide an exciting but inexpensive evening out. The ingredients are fun, games, good food, dancing and prizes. Play money will be used at the games of chance but big winners will collect real prizes.

Admission tab is \$1 for members, \$2 for guests. Special French dip sandwiches will sell for 90 cents. The games start at 8 p.m. The Rhythm Masters will play for dancing from 9 p.m. to 1 a.m.

\* \* \*

### Teenage Go-Go

A rock group called the "Eternal Nothings" will play for a Coronado Club Teenage Go-Go, Saturday, Feb. 3. Member parents should pick up tickets (25 cents for members, 50 cents for guests) by 5 p.m. Feb. 3. The dance is scheduled from 7:30 until 10:30 p.m. (The Eternal Nothings?)

### Luncheon Service

Noon hour luncheon service at the Coronado Club is better than ever. The recent modification of the Club kitchen allows very rapid service—one cafeteria and two sandwich lines are in operation. Surroundings are more than pleasant, and (you can't beat this) portal-to-portal bus service is provided.

Two buses leave Tech Area I right after the noon whistle and return to the area before 1 p.m. For the south side of the area, one of the buses enters Gate 6, moves south on 11th St. between Bldgs 892 and 880, goes around the south side of Bldg. 880, and stops in front about 12:05. At any point along this route, the driver will stop for passengers. After loading in front of Bldg. 880, the bus will stop in front of Bldg. 892 about 12:07 and then move to the Coronado Club on 11th St. and H St. through Gate 1. Again, the driver will stop along this route if you wave.

In the meantime, another bus has loaded passengers just outside Gate 1.

The buses return to the Area about 12:45. An announcement is made on the Club's public address system before departure.

And the food? Szabo concessionaires offer a variety of entrees ranging in price from 45 cents to 65 cents plus refreshing beverages.

\* \* \*

### Social Hours

Tonight, the Coronado Club will spread its famous seafood buffet for social hour. Bud Fischer and the fishermen will make the yo-ho-ho music. The buffet costs \$1.25 for adults, \$1 for kids.

On Friday, Feb. 2, Phil Graham will be on the band stand while Pat Reich and piano entertain in the lounge. A finger-licking chicken buffet will be served.

Don Lesmen will make the happy music Friday, Feb. 9, while the Coronado Club chefs wheel out the chuckwagon roast beef. Pat Reich will be at the piano in the lounge. Cost for the buffet is \$1.75 for adults, \$1.50 for children.

\* \* \*

### Bridge

Duplicate bridge meets Monday at 7 p.m. Ladies bridge meets Thursday, Feb. 1, at 1:15 p.m.

### Congratulations

Mr. and Mrs. D. R. Hinds (2443), a daughter, Linda Jo, Jan. 10.

PAGE EIGHT

JANUARY 26, 1968

SANDIA LAB NEWS

## Sandia Safety Signals

### Safety Tidbit

Did you know that unequally inflated tires cause poor steering, poor braking efficiency and excessive sidesway on curves?

### How Much Coffee?

Dr. Dale G. Friend of the Massachusetts Medical Society says, "Excessive use of coffee tends to make people jumpy, jittery and dizzy, and can become a factor in highway accidents."

### If You Smell Gas

Winter is here, which brings to mind furnaces going full blast and houses closed to ward off the cold. The primary danger of a gas leak is not asphyxiation, but explosion. If you do smell gas, don't light a match or turn on a light. Get everyone out of the house and call the gas company's emergency service. Open doors and windows. Finally, if you can—shut the gas off.